NMME Sub-seasonal Forecast System Exploratory Workshop

MARCH 30-31, 2015

NCWCP Conference Center
5830 University Research Court
College Park, Maryland

Background and Purpose

The North American Multi-Model Ensemble (NMME) research initiative has been testing an experimental forecast system aimed at improved sub-seasonal-to-seasonal (S2S) forecasts based on major coupled global models from US and Canadian centers. The NMME-Phase II system has been funded by NOAA, DOE, Environment Canada, NASA and NSF as part of NOAA Climate Test Bed (CTB)/ Climate Program Office, MAPP Program research to operation (R2O) transition activities. Although currently in an experimental stage, the NMME system has been providing real-time seasonal forecasts since August 2011. The NMME 30-year reforecast data are archived and available to the community for research and applications. After a positive post-project review in September 2014, NOAA is considering including the experimental NMME-Phase II seasonal forecast system as part of its operational suite starting in 2015.

Important decisions in sectors ranging from food and water security and public health, to emergency management and national security, rely on forecast information at S2S timescales (i.e., lead times from 3-4 weeks to as much as 9-13 months), which is beyond traditional weather forecasts, and often at shorter leads or at higher spatial and temporal resolutions than the current seasonal forecasts. The current NMME-Phase II system has been developed and tested as a seasonal forecast system providing forecasts in a monthly basis, although daily data are provided. Preliminary research has been done to test an NMME protocol as applicable to sub-seasonal probabilistic quantitative prediction. It is a natural next step to explore the potential design, benefits and feasibility of a sub-seasonal NMME-type prediction system.

The purpose of this workshop is to bring together the research community, NCEP operational forecasters, and stakeholders to explore opportunities and feasibility to evolve the current seasonal NMME-Phase II system into a system able to meet operational requirements and user needs for shorter lead times of several weeks, and to design the protocol and experiments for a potential NMME sub-seasonal forecast system. Discussions will consider a potential NMME sub-seasonal system in the broader context of the state-of-the-science and the systems that are being used or developed nationally and internationally to address the needs for S2S forecasts. The workshop is organized by NOAA Climate Test Bed (CTB) and NOAA Climate Program Office (CPO) Modeling, Analysis, Prediction and Project (MAPP) Program.

Meeting Objectives

1) Assess current operational sub-seasonal prediction practice and skill and on-going sub-seasonal system development at NCEP and other centers nationally and internationally.
2) Assess the sources of sub-seasonal predictability based on broad research and analysis including that of NMME data.
3) Improve understanding of operational requirements to help assess sub-seasonal prediction system requirements and feasibility characteristics.
4) Identify research priorities, pathways and experiments to help design an NMME sub-seasonal forecast system.
5) Coordinate with WCRP/WWRP S2S project sub-seasonal prediction research efforts.

Expected Outcome

- An assessment of the scientific opportunities and issues for an extension of NMME to sub-seasonal prediction and coordination with the S2S project.
- A coordinated re-forecast protocol for a potential NMME sub-seasonal forecast system.
- An assessment of the operational and stakeholder needs for future testing and implementation at CPC.

List of potential participants

The workshop will invite participants from the research, operational and application communities, including scientists and stakeholders from the public and private sectors, and agency representatives.

- The current NMME Team (B. Kirtman, J. Huang, J. Kinter, K. Pegion, S. Schubert, B. Merryfield, B. Denis, H. van den Dool, Q. Zhang, E. Becker, L-C Chen, K. Mo, J.Schemm, G. Vecchi, Joe Tribbia, M. Mendez)
- NCEP, CPO, NWS, ESPC, HIWPP/NGGPS
    - W. Higgins, R. Pulwarty, A. Mariotti, D. Barrie, H. Archambault
    - B. Lapenta, D. DeWitt, H. Tolman, A. Kumar, J. Gottschalck, D. Collins, S. Saha, Y. Zhu, M. Ek., F. Horsfall
    - T. Schneider, M. Pan, S. Benjamin
    - F. Toepfer, J. Cortinas, D. Eleuterio, J. Carmen, D. McCarren
- S2S research and applications
    - F. Vitart, A. Robertson, J.-Y. Lee, M. Cai, T. Hamill, B.Wang, E. Chang, G. Brunet
    - E. Wood; D. Lettenmaier, R. Koster, X-Z Liang
    - G. Carbin, M. Tippett, S. Weaver (severe weather)
    - Selected BASC S2S Study Members: C-D Zhang, A. Brown, D. Waliser, H. Lin, D. Kleist, J. Dutton

Organizing Committee

- Jin Huang (NOAA/CTB)
- Annarita Mariotti (NOAA/CPO)
- Kathy Pegion (George Mason University)
- Ben Kirtman (University of Miami)
- Siegfried Schubert (NASA)
- Dan Eleuterio (Navy)
- Bill Merryfield (Environment Canada)